



Core-Aligned Postsecondary Mathematics Tasks Using the Tasks in Your Classroom

The Core-to-College Math Team developed five classroom tasks designed for use in the classroom. Each task is designed to take no more than one class period, and the time needed for a task depends on the amount of individual or group work and the amount of classroom discussion the instructor decides to allow. The five tasks are:

- **Traffic Flow**—this task is designed for use with your unit on solving systems of linear equations and specifically focuses on the meaning of the general solution of a system of linear equations that has infinitely many solutions.
- **Importance of Horizontal Asymptotes**—this task is designed for use with your unit on rational functions and focuses on the meaning and contextual interpretation of a horizontal asymptote.
- **Examining Rational Functions**—this task is designed for use with your unit on rational functions and focuses on understanding the end behavior of the graphs of rational functions.
- **Presenting Data**—this task is designed to be an introduction to understanding, representing, and interpreting data. You can use this task at any time in your course to introduce the idea of using functions to model real-world phenomena.
- **Culminating Project**—this task is designed to be a final modeling project for your students. Students are given raw sets of data with little direction as to the type of function to use as a model or the typical follow-up questions seen in most textbooks. Instead, students are asked to choose an appropriate model, justify their choice, and create and answer their own questions about the data and the model—much as they would do in a research situation.

Each complete task template is presented in the same format:

- Description of the task and where the task fits within a curriculum
- Example task
- Prior knowledge
- Common Core State Standards (CCSS) alignment
- Complete solution
- Follow-up task
- Student handouts (example task and the follow-up task)

It is important to note that these tasks are not designed to be used in a particular order, nor are they written to be the definitive problems for the areas they are designed to highlight. It is up to you to determine which tasks are used, how they are used in the classroom, and whether the examples provided are appropriate for the ability level of your students. You may choose as many or as few of the tasks to implement in the classroom as you desire.

One method for incorporating the tasks into your classroom is to choose one particular task to implement each semester, see how it works, and modify the task the next semester as needed. You may also choose to “scaffold” the example tasks by adding questions designed to lead students to correct responses or may choose to change the context of the example problem. For example, one instructor suggested changing the context of the Traffic Flow task to water flowing through pipes rather than cars driving along one-way streets. Another instructor suggested having fewer intersections in the Traffic Flow task in order to cut down on the work involved in creating and solving the system of equations.

A focus of the tasks is giving students the opportunity to explore non-typical problems, discuss possible solutions paths with their fellow students, and come to a group consensus about how the problem can be solved, what the solution is, and whether there are any limitations to the solution that should be considered. The mathematical discourse—giving your students a chance to respectfully argue mathematical concepts—is perhaps more important than merely finding the solution.